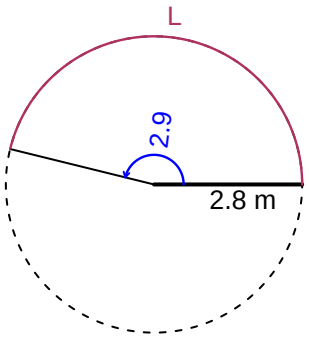
Name: Date:

Trig Final (Practice v23)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.

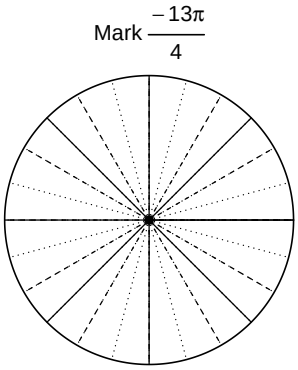
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 2.9 radians. The radius is 2.8 meters. How long is the arc in meters?

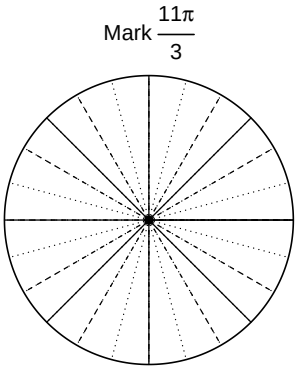


Question 2

Consider angles $\frac{-13\pi}{4}$ and $\frac{11\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{-13\pi}{4}\right)$ and $\cos\left(\frac{11\pi}{3}\right)$ by using a unit circle (provided separately).



Find $\sin(-13\pi/4)$



Find $\cos(11\pi/3)$

Question 3

If $\tan(\theta) = \frac{-77}{36}$, and θ is in quadrant II, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = -2$ meters, an amplitude of 8.06 meters, and a frequency of 5.39 Hz. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).